

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Hochmuth et al. Confirmation No.: 5310
Application No.: 09/960,523 Examiner: Nguyen, Hau H.
Filing Date: Sept. 21, 2001 Group Art Unit: 2676
Title: SYSTEM AND METHOD FOR COMMUNICATING GRAPHICS OVER A NETWORK

Mail Stop Appeal Brief-Patents
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TRANSMITTAL OF APPEAL BRIEF

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Sir:

Transmitted herewith in triplicate is the Appeal Brief in this application with respect to the Notice of Appeal filed on March 9, 2004.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) \$330.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

() (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d) for the total number of months checked below:

() one month	\$110.00
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() The extension fee has already been filled in this application.

(X) (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 08-2025 the sum of \$330.00. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

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Respectfully submitted,

Hochmuth et al.

By

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**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES**

PATENT

In Re Application of:

Hochmuth et al.

Serial No.: 09/960,523

Filed: September 21, 2001

For: SYSTEM AND METHOD FOR
COMMUNICATING GRAPHICS OVER
A NETWORK

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APPEAL BRIEF UNDER 37 C.F.R. §1.192

Mail Stop Appeal Brief
Commissioner of Patents and Trademarks
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

This is an appeal from the decision of Examiner Hau H. Ngyuen, Group Art Unit 2676, mailed February 17, 2004 (Paper No. 5), rejecting all claims 1-19 in the present application and making the rejection FINAL.

I. REAL PARTY IN INTEREST

The real party in interest of the instant application is Hewlett-Packard Development Company, a Texas Limited Liability Partnership having its principal place of business in Houston, Texas.

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF THE CLAIMS

On a substantive basis, the Office Action rejected all claims 1-19. More specifically, the Office Action rejected all claims under 35 U.S.C. § 102(e) as allegedly anticipated by U.S. Patent 6,304,895 to Schneider et al. (hereafter "Schneider"). For the reasons set forth herein, Applicants submits that these rejections are misplaced and should be overturned by the Board.

IV. STATUS OF AMENDMENTS

No amendments have been made to any claims during the prosecution of this application. A copy of the current claims is attached hereto as Exhibit A.

V. SUMMARY OF THE INVENTION

The present invention is generally directed to a system and method for communicating graphics across one or more networks. One embodiment (FIG. 10) is directed to a system, which comprises a frame buffer memory 420 for storing and maintaining a previous frame of graphics information, a temporary memory 430 configured to store at least a portion of a

current frame of graphics information, comparison logic 440 for comparing a portion of the current frame of graphics information with a corresponding portion of the previous frame, and transmission logic (450) for transmitting the portion of the current frame to a destination computer (50), if the comparison logic (440) determines that the portion of the current frame of graphics information differs from the corresponding portion of the previous frame by more than a predetermined measure.

In accordance with another embodiment, a method (FIG. 12) is provided that stores a frame of graphics information obtained from a video signal, receives at least a portion of a current frame of graphics information (706), compares a portion of the current frame of graphics information with a corresponding portion of the stored frame of graphics information (708). Then, if the compared portion of the current frame of graphics information differs by at least a predetermined amount from the corresponding portion of the stored graphics information (710), the method transmits the compared portion of the current frame of graphics information to a destination computer and overwrites the corresponding portion of the stored graphics information with the compared portion of the current frame of graphics information (712).

VI. CONCISE STATEMENT OF THE ISSUES PRESENTED FOR REVIEW

The principal issue for determination in this appeal is whether claims 1-19 are anticipated by Schneider. More specifically, issues in this appeal are:

- 1) whether Schneider's disclosure of a GDI representation of digitized video signals discloses logic and operations associated with a frame buffer memory, as claimed;
- 2) whether Schneider discloses comparison logic for comparing only a portion of a current frame of graphics information with a corresponding portion of a previous

frame, and transmission logic for transmitting the portion of the current frame to a destination computer, if the comparison logic determines that the portion of the current frame of graphics information differs from corresponding portion of the previous frame by more than a predetermined measure;

- 3) whether Schneider discloses a second frame buffer memory for storing and maintaining a previous frame of graphics information received from a second video input;
- 4) whether Schneider discloses input logic configured to format and store a portion of a frame of graphics information into an appropriate location of a frame buffer memory, wherein the portion is less than an a whole frame buffer; and
- 5) whether Schneider discloses receiving and comparing only a portion of a current frame of graphics information with a corresponding portion of a previous frame; and if the received portion differs from the corresponding portion by at least a predetermined amount, the transmitting the compared portion to a destination computer and overwriting the corresponding portion with the portion.

VII. GROUPING OF THE CLAIMS

The claims are divided into four (4) claim groupings, as set out below. For purposes of the argument set forth in this appeal brief, one claim from each group will be evaluated and discussed in connection with the cited art. The claim groups include:

- (1) Claim Group I, which comprises claims 1-10 and 13;
- (2) Claim Group II, which comprises claims 11-12;
- (3) Claim Group III, which comprises claims 14-15; and
- (4) Claim Group IV, which comprises claims 16-19.

Reasons that Claim Groups Do Not Stand or Fall Together

Although, in reality, all claims of an application are distinct, Applicants have grouped the claims of the present application into four distinct claim groups. One claim for each group has been chosen as the exemplary claim. The reason that the claims for any given group do not stand or fall with any claims of another group is, ultimately, because they are of differing scope. This differing scope is more specifically set out below.

With regard to Claim Group I, claim 1 (the exemplary claim) defines a temporary memory configured to store at least a portion of a current frame of graphics information. In addition, claim 1 defines comparison logic and transmission logic. If the Board determines that these features (as claimed) define claim 1 over Schneider, then claim 1 should stand or fall independent of the other claim groups.

With regard to Claim Group II, claim 11 defines a second frame buffer memory for storing and maintaining a previous frame of graphics information from a second video signal. If the Board determines that these features (as claimed) define claim 11 over Schneider, then claim 11 should stand or fall independent of the other claim groups.

With regard to Claim Group III, claim 14 (the exemplary claim) defines input logic configured to format and store a portion of a frame of graphics information received at the input to an appropriate location of a frame buffer memory, the portion being less than the whole frame buffer. If the Board determines that these features (as claimed) define claim 14 over Schneider, then claim 14 should stand or fall independent of the other claim groups.

With regard to Claim Group IV, claim 16 (the exemplary claim) defines receiving and comparing a portion of a current frame of graphics information with a corresponding portion of a previous frame; and if the received portion differs from the corresponding portion by at

least a predetermined amount, the transmitting the compared portion to a destination computer and overwriting the corresponding portion with the portion. If the Board determines that these features (as claimed) define claim 16 over Schneider, then claim 16 should stand or fall independent of the other claim groups.

VIII. ARGUMENT

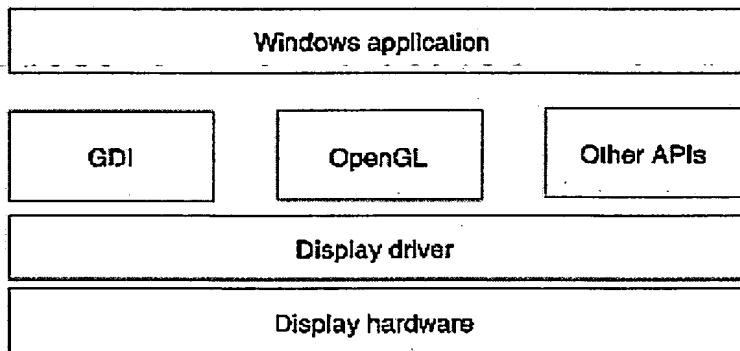
Fundamental Distinction of Claimed Invention (*applicable to all claim groups*)

There are several significant distinctions between the invention defined in the independent claims of the present application and the teachings of Schneider. For example, the claims of the present application define an apparatus and method that operate at the frame-buffer level. That is, the graphics information that is communicated across the network is graphics information from the frame buffer. In this regard, independent claim 1 defines “*a frame buffer memory*,” “*a temporary memory [for storing] a current frame* of graphics information,” “*comparison logic for comparing a portion of the current frame ... previous frame*,” and “*transmission logic for transmitting the portion of the current frame ...*” Independent claims 14 and 16 also have language that defines their applicability to the frame buffer level.

In contrast to this claimed aspect, or even the communication of graphics information across a network generally, the teachings of Schneider are concerned with the control of a remote (or target) computer, wherein the graphics information that is transferred in the form of GDI (graphics device interface) calls. (e.g., Schneider states: “*In general, the present invention transmits a GDI representation of digitized video signals* as well as mouse and keyboard signals over a communication link.” Schneider col. 3, lines 29-32; “*The remote control software application 200 captures those GDI requests*

and retransmits them to the controlling computer." Schneider col. 7, lines 2-5; "In the second embodiment, ... rather than using GDI calls to redraw the entire screen ..., *the analyzing digitizer control applications 240 analyzes the captured image and used GDI calls to redraw only changed blocks instead.*" Schneider col. 7, lines 38-50; etc.)

As is well known, GDI calls are interpreted by display drivers and/or display hardware to render graphics primitives and/or objects. The generation and/or interpretation of GDI calls are outside the context of the frame buffer, and therefore outside the scope of embodiments of the invention, as claimed in the present application. To assist the Board, the undersigned provides the following drawing, which was obtained from an article entitled "Introduction to OpenGL on Windows" taken from the Web site maintained by the OpenGL organization (www.opengl.org). Specifically, the figure was obtained from: http://www.opengl.org/developers/documentation/OGL_userguide/OpenGLWin-10.html



As can be readily observed from the figure, and verified from a number of other publicly-available sources, GDI (is the original Windows 2D graphics interface) resides at the same "level" as OpenGL or other graphics APIs. Importantly, GDI does NOT reside at the

level of the frame buffer (within the display hardware), and as such, the teachings of Schneider cannot properly anticipate the claims of the present application.

For at least this reason the rejections of all claims are fundamentally misplaced and should be overturned.

Discussion of Claim Group I (Claims 1-10 and 13)

Turning now to the specific claim rejections of the claims of Claim Group I, independent claim 1 (the exemplary claim) was rejected under 35 U.S.C. § 102 as allegedly anticipated by Schneider. Applicants respectfully submit that this rejection be overturned.

Independent claim 1 recites:

1. An apparatus for communicating graphics across a network comprising:

a frame buffer memory for storing and maintaining at least a portion of a previous frame of graphics information, the graphics information being contained in a video signal;

a temporary memory configured to store at least a portion of a current frame of graphics information;

comparison logic for comparing a portion of the current frame of graphics information with a corresponding portion of the previous frame; and

transmission logic for transmitting the portion of the current frame to a destination computer, *if the comparison logic determines that the portion of the current frame of graphics information differs from the corresponding portion of the previous frame by more than a predetermined measure.*

(*Emphasis added.*) Claim 1 patently defines over Schneider for at least the reason that Schneider fails to disclose the features emphasized (bold and italic) above.

As discussed above, the invention of claim 1 defines an apparatus that operates at the frame buffer level. In this regard, the apparatus has comparison logic that compares graphics information stored in a frame buffer memory. As discussed above (which discussion is

repeated and realleged herein), Schneider does disclose or teach this comparison logic. In addition, claim 1 calls for transmission logic that transmits a portion of a current frame (i.e., information from the frame buffer memory) to a remote computer. The transmission to a remote computer (in order to control a target computer) of GDI calls (as taught by Schneider) is NOT the same as, nor the equivalent of, the transmission of data from a frame buffer memory. For at least this reason, claim 1 defines over the cited art.

Further, and as a separate and independent reason for the patentability of claim 1, claim 1 calls for the transmission logic to transmit the compared graphics information and transmits that information "if the comparison logic determines that the portion of the current frame of graphics information differs from the corresponding portion of the previous frame by more than a predetermined measure." Schneider teaches no such feature.

In fact, the FINAL Office Action (page 3, line 18) only alleges that Schneider teaches the transmission of "changed blocks" (citing col. 8, lines 25-42). However, there is no teaching whatsoever in Schneider as to any threshold measure that triggers or limits the transmission. In this regard, Schneider teaches the transmission of each block if there is any detectable difference, whereas claim 1 specifically defines an apparatus that transmits frame buffer information to a remote computer "if the comparison logic determines that the portion of the current frame of graphics information differs from the corresponding portion of the previous frame **by more than a predetermined measure.**" For at least this additional reason, claim 1 defines over the cited art.

For at least the foregoing reasons, Applicants respectfully submit that the rejections of claim 1 are misplaced and should be overturned. Of course, the rejections of claims 2-13, which depend from claim 1, should be overturned for at least the same reasons.

Discussion of Claim Group II (Claims 11-12)

Turning now to Claim Group II, the FINAL Office Action rejected claim 11 (the exemplary claim) as allegedly anticipated by Schneider. Specifically, the Office Action stated:

In regard to claims 10-13, as shown in Figs. 1A and 1B, the communication system comprises a first video input from a local source and another video signal input from a remote source. As cited above, Schneider et al. Teach previous frame is stored in a first buffer and current frame is stored in a second buffer.

Significantly, the rejection failed to cite to any specific location for this alleged teaching within Schneider. Further, contrary to the statement of the Office Action (i.e., “As cited above...”), there was no previous citation to this alleged teaching. For this reason alone, this rejection is erroneous and should be overturned.

In addition, and as separate and independent basis for the patentability of claim 11, claims 10 and 11 recite:

10. The apparatus of claim 1, further comprising a second input for receiving a second video signal.

11. The apparatus of claim 10, *further comprising a second frame buffer memory for storing and maintaining a previous frame of graphics information from the second video signal.*

As emphasized above, claim 11 specifically defines “a second frame buffer memory for storing and maintaining a previous frame of graphics information from the second video signal.” The FINAL Office Action does not even allege (with specificity) that any such feature is taught in Schneider. Instead, the Office Action alleges only that Schneider inherently has two video inputs. Even assuming that to be true, it cannot be assumed that there are necessarily two frame buffer memories. For example, to separate video input could be switch-connected to a single frame buffer memory. Thus, this teaching cannot be assumed to be inherent within Schneider. Simply stated, Schneider fails to teach the subject matter

defined in claim 11. Moreover, the Office Action has failed to set forth a *prima facie* rejection, as the Office Action has not alleged with specificity that the features are disclosed in Schneider.

For at least these reasons, the rejection of claim 11 should be overturned by the Board.

Discussion of Claim Group III (Claims 14-15)

Independent claim 14 (the exemplary claim) was rejected under 35 U.S.C. § 102 as allegedly anticipated by Schneider. Applicants respectfully submits that this rejection be overturned.

Independent claim 14 recites:

14. An apparatus for displaying graphics information received from a remote computer and communicated across a network comprising:
an *input for receiving packetized graphics information*; and
input logic configured to format and store a portion of a frame of graphics information received at the input into an appropriate location of a frame buffer memory, the portion being an amount less than the whole frame buffer.

(*Emphasis added.*) Claim 14 patently defines over Schneider for at least the reason that Schneider fails to disclose the features emphasized (bold and italic) above.

Unfortunately, the FINAL Office Action did not provide separate and independent treatment or discussion of claim 14, but instead grouped it with claim 1 (setting forth only a single rejection for both claims -- notwithstanding the significant differences between the two claims). As described above, Schneider does operate at the frame buffer level and as such does not teach the “input logic” claimed by claim 14. In this regard, claim 14 defines input logic that is configured to receive packetized graphics information, then formats and stores that information in a portion of (and less than all) *the frame buffer memory*. Schneider appears to teach the receipt of GDI calls and the redrawing (re-rendering) of certain graphics

information. However, Schneider wholly fails to teach the claimed feature of receiving and formatting graphics information to be directly stored in a frame buffer memory.

For at least this reason (and in addition to the fundamental distinction discussed above – which he repeated and realleged herein), Applicants respectfully submit that the rejection of claim 14 misplaced and should be overturned. Of course, the rejection of claim 15, which depends from claim 14, should be overturned for at least the same reasons.

Discussion of Claim Group IV (Claims 16-19)

Turning now to Claim Group IV, independent claim 16 (the exemplary claim) was rejected under 35 U.S.C. § 102 as allegedly anticipated by Schneider. Applicants respectfully submit that this rejection be overturned.

Independent claim 16 recites:

16. A method for communicating graphics across a computer network comprising:

storing at least a portion of a frame of graphics information obtained from a video signal;

receiving at least a portion of a current frame of graphics information;

comparing a portion of the current frame of graphics information with a corresponding portion of the stored frame of graphics information;

if the compared portion of the current frame of graphics information differs by at least a predetermined amount from the corresponding portion of the stored graphics information, then transmitting the compared portion of the current frame of graphics information to a destination computer; and

if the compared portion of the current frame of graphics information differs by at least a predetermined amount from the corresponding portion of the stored graphics information, then overwriting the corresponding portion of the stored graphics information with the compared portion of the current frame of graphics information.

(*Emphasis added.*) Claim 16 patently defines over Schneider for at least the reason that Schneider fails to disclose the features emphasized (bold and italic) above.

Similar to the discussion above in connection with claim 1 (and in addition to the fundamental distinction discussed above – which he repeated and realleged herein), the invention of claim 16 defines a method that operates at the frame buffer level. In this regard, the method compares graphics information stored in a frame buffer memory. Simply stated, Schneider does not have or teach such a comparison step. In addition, claim 16 calls for the transmission of a portion of a current frame (i.e., information from the frame buffer memory) to a remote computer. The transmission to a remote computer (in order to control a target computer) of GDI calls (as taught by Schneider) is NOT the same as, nor the equivalent of, the transmission of data from a frame buffer memory. For at least this reason, claim 16 clearly defines over the cited art.

Further, and as a separate and independent reason for the patentability of claim 16, claim 16 calls for the transmission of the compared graphics information “*if the compared portion of the current frame of graphics information differs by at least a predetermined amount from the corresponding portion of the stored graphics information.*” Schneider teaches no such feature. Both the first and the FINAL Office Actions wholly failed to address this element. Applicants noted this deficiency in their response to the first Office Action. Notwithstanding, the rejection set forth in the FINAL Office Action was essentially word-for-word the same as the rejection in the first Office Action. And, like the deficiency of the first Office Action, the FINAL Office Action failed to address this feature of claim 16. In fact, the total discussion in the Office Action of claims 1-4, 14, 16-17, and 19 is set forth in only a single, brief paragraph (notwithstanding the significant differences in these claims).

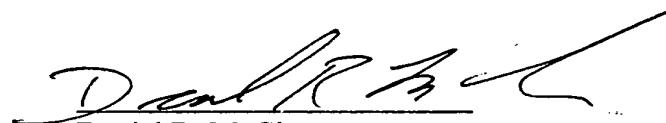
For the foregoing reasons, Applicants respectfully submit that the rejections of claim 16 are misplaced and should be overturned. Of course, the rejections of claims 17-19, which depend from claim 16, should be overturned for at least the same reasons.

IX. CONCLUSION

Based upon the foregoing discussion, Applicants respectfully requests that the Examiner's final rejection of claims 1-19 be overruled by the Board, and that the application be allowed to issue as a patent with all pending claims.

Please charge Hewlett-Packard Company's deposit account 08-2025 in the amount of \$330 for the filing of this Appeal Brief. No additional fees are believed to be due in connection with this Appeal Brief. If, however, any additional fees are deemed to be payable, you are hereby authorized to charge any such fees to deposit account No. 08-2025.

Respectfully submitted,



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X. APPENDIX

Claims

1. An apparatus for communicating graphics across a network comprising:
 - a frame buffer memory for storing and maintaining at least a portion of a previous frame of graphics information, the graphics information being contained in a video signal;
 - a temporary memory configured to store at least a portion of a current frame of graphics information;
 - comparison logic for comparing a portion of the current frame of graphics information with a corresponding portion of the previous frame; and
 - transmission logic for transmitting the portion of the current frame to a destination computer, if the comparison logic determines that the portion of the current frame of graphics information differs from the corresponding portion of the previous frame by more than a predetermined measure.
2. The apparatus of claim 1, wherein the frame buffer memory is configured to store an entire frame of graphics information.
3. The apparatus of claim 1, wherein the predetermined measure is any quantifiable difference.
4. The apparatus of claim 1, wherein the video signal is an analog video signal.
5. The apparatus of claim 1, further comprising compression logic for compressing the portion of the current frame before transmission.

6. The apparatus of claim 1, further comprising a network interface circuit coupled to both the transmission logic and the network, the network interface circuit configured to format and communicate the graphics information over the network to a remote computer.
7. The apparatus of claim 1, wherein the network comprises a local area network (LAN).
8. The apparatus of claim 1, wherein the network comprises a wide area network (WAN).
9. The apparatus of claim 1, wherein the network interface circuit is configured to format the graphics information into a plurality of Internet Protocol (IP) packets that are communicated over the computer network to the remote computer.
10. The apparatus of claim 1, further comprising a second input for receiving a second video signal.
11. The apparatus of claim 10, further comprising a second frame buffer memory for storing and maintaining a previous frame of graphics information from the second video signal.

12. The apparatus of claim 10, further comprising a second temporary memory configured to store at least a portion of a current frame of graphics information from the second video signal.

13. The apparatus of claim 1, wherein temporary memory is configured to store an entire frame of the current frame of graphics information

14. An apparatus for displaying graphics information received from a remote computer and communicated across a network comprising:
an input for receiving packetized graphics information; and
input logic configured to format and store a portion of a frame of graphics information received at the input into an appropriate location of a frame buffer memory, the portion being an amount less than the whole frame buffer.

15. The apparatus of claim 14, wherein the input logic further comprises logic configured to decompress received graphics information.

16. A method for communicating graphics across a computer network comprising:
storing at least a portion of a frame of graphics information obtained from a video signal;
receiving at least a portion of a current frame of graphics information;
comparing a portion of the current frame of graphics information with a corresponding portion of the stored frame of graphics information;

if the compared portion of the current frame of graphics information differs by at least a predetermined amount from the corresponding portion of the stored graphics information, then transmitting the compared portion of the current frame of graphics information to a destination computer; and

if the compared portion of the current frame of graphics information differs by at least a predetermined amount from the corresponding portion of the stored graphics information, then overwriting the corresponding portion of the stored graphics information with the compared portion of the current frame of graphics information.

17. The method of claim 16, wherein the step of receiving at least a portion of the current frame of graphics information more specifically comprises receiving an entire frame of graphics information.

18. The method of claim 16, further comprising compressing the compared portion of the current frame of graphics information before transmitting to the destination computer.

19. The method of claim 16, wherein the predetermined measure is any quantifiable difference.